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(Ob effektivnosti khlorofosa i ego etil'nogo gomologa protiv lichinok
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Recently, Dipterex has been widely used as an insecticide. It has been particularly successful against gadfly larvae in domestic animals when applied externally, orally, or subcutaneously. The first attempt to control gadfly larvae with Dipterex was made in February 1957 at the laboratory for the control of gadfly and other bloodsucking diptera of the Agricultural Scientific Research Institute of the Far North. At the time of the study the larvae were in the second larval stage.

A 10% aqueous solution was applied subcutaneously in doses ranging from 10—50 mg/kg liveweight. The results were insignificant, the larval death rate ranging from 5.7%—16.7%. Doses larger than 35 mg/kg liveweight were toxic (D. V. Savel'ev and N. V. Voblikova, 1960).

In later years, USSR literature published a few more experiments with Dipterex as a systemic insecticide for controlling subcutaneous gadfly larvae in reindeer. The results obtained were contradictory.

In 1961, D. F. Loginov and N. I. Popov reported great success with Dipterex. The experiment was conducted in December 1959 on five groups of reindeer, using subcutaneous doses of 10 — 50 mg/kg liveweight. To assess the results, one animal from each group was slaughtered. However, only the data from one animal was reported — 30 dead larvae from a total of 32. On the basis of this experiment the recommended times for treatment were between December and February, or in the fall.

But these times are questionable; they are based on only one experiment. In the fall the majority of the larvae are in the first stage or are passing to the second. Therefore, how can the chemical affect the parasite?

In their next work, D. F. Loginov and N. I. Popov, together with T. F. Terent'ev (1962), present further details of this same experiment and emphasize the correlation between the dose and the percentage death rate obtained. The same authors report a new experiment in which a 10 — 20% aqueous solution of Dipterex was applied orally, subcutaneously and intramuscularly. Destruction varied between 27.4% and 98.7%.

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In the same article they describe an experiment with the homologous ethyl compound of Dipterex. It was prepared by the All-Union Scientific Research Institute of Veterinary Sanitation (VNIIVS). In January 1961, a 20% solution of this preparation was given to the animals orally, in doses of 150, 200 and 250 mg/kg liveweight. Five months later, larvae counts were made in both treated and control reindeer. These showed that the various doses gave larval death of 28.8%, 67.9% and 80.9% respectively. It must be observed that the technique used is not accurate for reindeer because of their dense hair covering. In this article the authors refrained from recommending treatment in fall.

Another author (V. Bespalov, 1962), recommended treating reindeer with Dipterex in October. He wrote that experiments were conducted from January to May 1959, but he did not publish any results. Therefore he cannot advocate treatment in October or at any other time of the year, and his work must be disregarded.

To ascertain the effectiveness of subcutaneous Dipterex injections on the first larval stage of gadfly in reindeer, the workers of the VNIIVS (D. V. Savel'ev and others, 1962), applied a 10% Dipterex solution to 10 reindeer of different age and sex in September 1960. At slaughter, the infestation in treated and control animals was the same. In February 1961, the authors used subcutaneous doses of 30 and 40 mg/kg liveweight to study the effect of Dipterex on the second larval stage. This treatment resulted in a maximum larval death rate of 3 .8%, and an average death rate of 25.7%. In one animal which had a very mild infestation, the death rate was 50%.

Considering all these contradictions, the authors repeated this experiment in 1963. On the recommendation of VNIIVS, the homologous ethyl compound of Dipterex was tested simultaneously. This ethyl compound, according to I. A. Kurmanov (1961), is 1.5 to 2 times less toxic to the host animal than the previous preparation (Methyl Dipterex).

These tests were carried out in the area of Dudinka in the Taimyr National District on 3 groups of 5 reindeer (different age and sex) from the experimental herd of the OPKh Institute. A 10% aqueous solution of Dipterex was used.

The first group received subcutaneous injections of 35 mg/kg liveweight and the second and third group received oral doses of 100 and 150 mg/kg, respectively. The animals were treated on 4 and 5 March and selective slaughter took place from 12 — 16 April. The results are given in Table 1.

Table 1

Control of second larval stage of subcutaneous gadfly in reindeer with Dipterex

Group	Dose, mg/kg	Mode of application	Number of reindeer			Larvae found			% of larval killed
			total tested	slaughtered	died	total	live	dead	
I	35	Subcutaneous	5	2	1	338	300	38	11.2
II	100	Oral	5	1	—	294	204	90	30.6
III	150	Oral	5	2	1	236	180	56	23.7

It is evident from this table that after subcutaneous treatment with 35 mg/kg liveweight, destruction varied between 7.8 — 14.1% (average 11.2%). Oral doses of 100 and 150 mg/kg gave respective death rate of 23.7% and 30.6% (average 27.5%). The infestation in the reindeer varied from 101 to 294 larvae per head — an average of 174. One animal from group I and one from group III died during the experiment. These results confirm the poor effect of Dipterex when used as a systemic insecticide against gadfly larvae in reindeer.

The homologous ethyl compound was applied in a 10% aqueous suspension because its solubility in water is only 1% at 55 — 60°C. This preparation was given orally in doses of 100, 200 and 250 mg/kg, and subcutaneously in doses of 35 and 50 mg/kg to groups of 5 animals. Six animals were slaughtered in April, 38—41 days after treatment. (Table 2).

Table 2

Control of larval stage of subcutaneous gadfly in reindeer with the homologous ethyl compound of Dipterex

Group	Dose, (mg/kg)	Mode of application	Number of reindeer			Larvae found			% of larval killed
			total tested	slaughtered	died	total	live	dead	
I	35	Subcutaneous	5	—	—	—	—	—	—
II	50	"	5	1	1	267	263	4	1.5
III	100	Oral	5	2	1	332	332	—	0
IV	200	"	5	2	—	996	981	15	1.5
V	250	"	5	1	—	303	295	8	2.6

From these results we find that the overall destruction varied from 0 — 2.6%. Infestation varied from 89 to 867 larvae per head — an average of 316. Except for one buck which died 5 hours after a subcutaneous injection of 50 mg/kg and one fawn which died 6 days after treatment, no negative effects were noticed.

CONCLUSIONS

1. Dipterex given orally or subcutaneously has a weak effect on subcutaneous gadfly in the second larval stage. In our experiments it did not exceed 31.8%.

2. The homologous ethyl compound of Dipterex is practically insoluble in water. A 10% aqueous suspension given orally in doses of 100 — 250 mg/kg liveweight, and subcutaneously in doses of 35 and 50 mg/kg, was completely ineffective — the death rate did not exceed 2.6%.

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